

REMARKS

Claims 1-18 are pending in the present application. In the Office Action, claims 1-18 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Suzuki, et al (U.S. Patent No. 6,329,643). The Examiner's rejections are respectfully traversed.

Suzuki is directed to a method of calibrating a second vertical heat treating apparatus based on a heat treatment process carried out in a first heat treating apparatus. Suzuki teaches adjusting set temperatures of temperature controllers 51, 52, 53 of the first vertical heat treating apparatus such that measured temperatures of corresponding temperature measurement wafers MW are equal to a target temperature, such as 900°C. See Suzuki, col. 5, ll. 26-40 and Figure 3. Suzuki then describes measuring a first thickness of an oxide film formed on the measurement wafers MW. The target temperature is then changed and the process is repeated to produce a second measured film thickness. A film thickness/temperature coefficient equal to the change in the film thickness divided by the change in the target temperature is then calculated. See Suzuki col. 6, ll. 18-62 and Figure 4.

Suzuki also describes calibrating the second vertical heat treating apparatus by carrying out a heat treating step on a wafer W using the secondary side under the same conditions as were used on the primary side. A thickness of an oxide film formed on the wafer W is measured and a difference between the thickness of the oxide film formed on the wafer W and a reference thickness measured on the primary side, such as the first thickness of an oxide film formed on the measurement wafers MW, is determined. The set temperatures on the secondary side are then calibrated based on the difference. See Suzuki, col. 7, ll. 20-65 and Figure 6.

However, Suzuki fails to teach or suggest determining a deposition rate for each zone of the furnace, the deposition rate being determined as a function of the film thickness of the wafer

and the first bake time, as set forth in independent claims 1, 7, and 13. In rejecting claims 1-18, the Examiner appears to be equating the film thickness/temperature coefficient described by Suzuki with the deposition rate set forth in the present invention. This equation is clearly incorrect, as evidenced by the units used to describe the two quantities: the film thickness/temperature coefficient is a thickness per unit temperature, whereas the deposition rate is a thickness per unit time.

Suzuki also fails to teach or suggest assigning the deposition rate of one of the zones as a baseline for the other zones of the furnace, adjusting the deposition rate of the other zones of the furnace to be substantially the same as the baseline deposition rate, and baking a subsequent set of wafers in the furnace with the adjusted deposition rates. For at least the aforementioned reasons, Applicants respectfully submit that independent claims 1, 7, 13, and all claims depending therefrom are not anticipated by Suzuki and request that the Examiner's anticipation rejections of these claims be withdrawn.

Moreover, it is respectfully submitted that the pending claims are not obvious in view of Suzuki. To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). As discussed above, Suzuki fails to teach or suggest many features of the claimed invention. In particular, Suzuki is completely silent with regard to determining a deposition rate for each zone of the furnace, the deposition rate being determined as a function of the film thickness of the wafer and the first bake time, as set forth in independent claims 1, 7, and 13. Accordingly, Suzuki also fails to teach or suggest assigning the deposition rate of one of the zones as a baseline for the other the zones of the furnace, adjusting the deposition rate of the

other the zones of the furnace to be substantially the same as the baseline deposition rate, and baking a subsequent set of wafers in the furnace with the adjusted deposition rates.

Suzuki also fails to provide any suggestion or motivation to modify the prior art to arrive at Applicants' claimed invention. In particular, Suzuki provides no suggestion or motivation for determining a deposition rate. To the contrary, Suzuki teaches that a film thickness/temperature coefficient should be determined to calibrate the second vertical heat treating apparatus. See Suzuki, col. 7, l. 65 - col. 8, l. 14. As the Examiner well knows, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. That is, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573 (Fed. Cir. 1997).

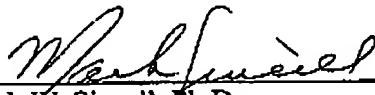
Suzuki also appears to teach away from the present invention. In general, Suzuki teaches that quantities determined in the first vertical heat treating apparatus (e.g. the film thickness/temperature coefficient) are used to calibrate the second vertical heat treating apparatus. Suzuki also teaches that the first and second vertical heat treating apparatuses are different apparatuses. See Suzuki, col. 7, ll. 39-43. Applicants respectfully submit that this teaches away from determining a deposition rate for each zone of the furnace, assigning the deposition rate of one of the zones as a baseline for the other the zones of the furnace, and adjusting the deposition rate of the other the zones of the furnace to be substantially the same as the baseline deposition rate. It is by now well established that teaching away by the prior art constitutes *prima facie* evidence that the claimed invention is not obvious. See, *inter alia*, *In re*

Fine, 5 U.S.P.Q.2d (BNA) 1596, 1599 (Fed. Cir. 1988); *In re Nielson*, 2 U.S.P.Q.2d (BNA) 1525, 1528 (Fed. Cir. 1987); *In re Hedges*, 228 U.S.P.Q. (BNA) 685, 687 (Fed. Cir. 1986).

For the aforementioned reasons, it is respectfully submitted that all claims pending in the present application are in condition for allowance. The Examiner is invited to contact the undersigned at (713) 934-4052 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

Date: 9/23/04



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